

In the Claims:

1. (original): An optical fibre emulator, comprising:
an optical signal demodulator, having an input port for receiving a digitally-encoded optical signal and an output port for producing a digitally-encoded electrical signal corresponding to said digitally-encoded optical signal;

a digital shifter register for propagating digital data encoded on said electrical signal, said shift register having an input port for receiving said digital data encoded on said electrical signal, an information transfer rate substantially equal to the information transmission rate of a section of optical fibre of given length for a given wavelength, and an output port for reproducing said digital data after a predetermined time delay; and

an optical signal modulator, having an input port for receiving said digital data from said output port of said shift register and an output port for producing a digitally-encoded optical signal corresponding to said digitally-encoded electrical signal, the information transfer time from said input port of said optical signal demodulator to said output port of said optical signal modulator being less than or equal to the information transfer time of said section of optical fibre.
2. (original): The optical fibre emulator of claim 1, further comprising an optical signal attenuator, having an input port for receiving said digitally-encoded optical signal from said optical signal modulator and an output port for producing an attenuated version of said digitally-encoded optical signal.

3. (original): The optical fibre emulator of claim 2, wherein the amount of attenuation introduced by said optical signal attenuator is substantially equal to the amount of attenuation experienced by an optical signal propagating through said section of optical fibre, and the information transfer time from said input port of said optical signal demodulator to said output port of said optical signal attenuator is substantially equal to the information transfer time of said section of optical fibre.
4. (original): The optical fibre emulator of claim 1, wherein said shift register comprises a series of digital registers wherein data is shifted periodically from one to the next, and said output port may be selectively connected to any of said shift registers to vary the amount of time delay introduced by said shift register.
5. (original): The optical fibre emulator of claim 1, further comprising a serial-to-parallel bit converter disposed between said optical signal demodulator and said input port of said digital shift register so as to convert serial-bit digital data words received from said demodulator to parallel-bit data words for application to said shift register, and a parallel-to-serial bit converter disposed between said output port of said digital shift register and said optical modulator so as to convert parallel-bit data words derived from said shift register to serial-bit words for modulation of said optical carrier signal.
6. (original): The optical fibre emulator of claim 5, further comprising a digital decoder disposed between said serial-to-parallel bit converter and said input port of said digital shift register so as to convert a transmission code of a first length to a data code of a second, shorter length prior to application of said digital data to said shift register, and a digital encoder disposed between said output port of said shift register and said parallel-to-serial bit converter so as to convert said data code of said second length to

said transmission code of said first length prior to application of said digital data to said parallel-to-serial bit converter.

7. (original): The optical fibre emulator of claim 6, wherein the length of said transmission code is 10 bits and the length of said data code is 8 bits.
8. (original): The optical fibre emulator of claim 6, further comprising an optical signal attenuator, having an input port for receiving said digitally-encoded optical signal from said optical signal modulator and an output port for producing an attenuated version of said digitally-encoded optical signal.
9. (original): The optical fibre emulator of claim 8, wherein the amount of attenuation introduced by said optical signal attenuator is substantially equal to the amount of attenuation experienced by an optical signal propagating through said section of optical fibre, and the information transfer time from said input port of said optical signal demodulator to said output port of said optical signal attenuator is substantially equal to the information transfer time of said section of optical fibre.
10. (previously presented): The optical fibre emulator of claim 5, further comprising a digital decoder disposed between said serial-to-parallel bit converter and said input port of said digital shift register so as to convert a transmission code of a first length to a data code of a second, shorter length prior to application of said digital data to said shift register, and a digital encoder disposed between said output port of said shift register and said optical signal modulator so as to convert said data code of said second length to said transmission code of said first length prior to application of said digital data to said optical signal modulator.

11. (original): The optical fibre emulator of claim 10, wherein the length of said transmission code is 10 bits per word and the length of said data code is 8 bits per word.
12. (canceled)
13. (canceled)
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16. (canceled)
17. (canceled)
18. (canceled)
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